



PEPFAR

Supporting an Integrated
TB and HIV Response





PEPFAR supports programs to integrate the prevention, diagnosis, and treatment of TB into HIV services. In turn, PEPFAR supports programs to integrate HIV prevention, testing, care and treatment into TB services. PEPFAR's important role in Health Systems Strengthening also contributes to reducing the impacts of TB and HIV co-infection.

CONTENTS

PEPFAR: Supporting an Integrated Response to TB and HIV	4
Working Together: Integrating TB/HIV Services	5
Highlights from our Partners	7
PEPFAR Heroes Lead the Response to HIV and TB	10
Story of Hope: Right to Care Nurtures Patient	12
Tackling TB with GeneXpert in KwaZulu-Natal	14
Jozi Hospital Speeds up Diagnosis with GeneXpert	16
Tuberculosis and Influenza: A Deadly Combination	18
Kicking TB Right out of South Africa.....	19
“Thibela TB” has Miners Covered.....	21
Caring for our Children: Integrating TB and OVC Programs	23
Trained Nurses are Key to Managing Drug-Resistant TB	24
TB/HIV Care Nurse Mentors Boost the Rollout of IPT.....	26
An Award Winning TB Program: Responding to Community Needs	28
TB Patients Take Charge.....	29
Eastern Cape Protects Health Care Workers	30
Integrating TB and HIV Treatment Saves Lives	32
TB/HIV Care Teams on the Move	35
Innovative Technology supports Intensive Case Finding in eThekweni District, KwaZulu-Natal.....	37
Baseline Evaluation Assesses TB Program Management	39



Tuberculosis (TB) is a bacterial disease that is spread from person to person through the air. TB usually affects the lungs. The bacteria are put into the air when a person with TB of the lungs coughs, sneezes, laughs or sings.

PEPFAR

SECTION

1

PEPFAR

Supporting an Integrated Response to TB and HIV

The US President's Emergency Plan for AIDS Relief (PEPFAR) partners with government and parastatal agencies, private institutions, universities and non-governmental organizations in South Africa to improve the country's public health foundation, to prevent transmission of tuberculosis (TB) and HIV, to provide care and treatment for those who are already infected with HIV and TB, and to strengthen laboratory capacity.

In 2004, with the launch of the U.S. President's Emergency Plan for AIDS Relief (PEPFAR), U.S. government partner agencies including US Agency for International Development (USAID) and the Centers for Disease Control and Prevention (CDC) expanded the scale and scope of its financial and technical support in South Africa. The National Strategic Plan on HIV, STIs and TB, 2012-2016 (NSP) provides the blueprint for comprehensive HIV prevention, care and treatment services.

In addition, the US-South African Partnership Framework, a five-year cooperative agreement signed by South Africa and the United States in December 2010, provides guidelines to transition PEPFAR by strengthen the effectiveness, efficiency and sustainability of South Africa's national HIV and TB response through joint planning and decision-making. PEPFAR and the South African government are currently developing a Partnership Framework Implementation Plan which will explicitly spell out the scope and pace of this transition.

Today, the South African government is leading an unprecedented scale-up of HIV and AIDS prevention, care and treatment services throughout the country. Its improved capacity to respond rapidly to other public health threats is testament to the long-standing partnership between the U.S. and South African governments. The reauthorization of PEPFAR in 2008 means these productive relationships will continue as the government of South Africa moves toward program sustainability.

TB fuels the HIV epidemic. It is only through developing integrated systems for diagnosing and treating HIV and TB will we be able to overcome the devastating effects of the dual epidemics in South Africa. – Annatjie Peters, TB/HIV Lead, CDC South Africa

Working Together: Integrating TB/HIV Services

WHO and UNAIDS estimate that one-third of the 34 million people living with HIV and AIDS worldwide are co-infected with TB, one of the most common opportunistic infections. People infected with HIV are up to 50 times more likely to develop TB than HIV-negative people, and not surprisingly, TB is the leading cause of death among HIV-infected individuals, despite the fact that TB is curable.

South Africa's TB situation has reached a crisis point in several provinces. The country has one of the highest estimated TB rates in the world, ranking third among the 22 WHO-determined high-burden countries, with an estimated 461,000 new cases reported each year. The South African TB/HIV co-infection rate is also high, with approximately 70% of TB patients also testing positive for HIV. Further exacerbating the problem is the existence of drug-resistant TB, often caused by non-adherence to drug regimens.

For many years, attempts to tackle TB and HIV have been largely separate, despite the overlapping epidemiology. However, public health officials increasingly recognize that combined and coordinated efforts are the only way to halt the dual epidemics, and the South African government has made a significant investment in TB control. South Africa's National Department of Health (NDoH) has created a five-year strategic plan for the National TB Programme (NTP), which highlights TB/HIV co-infection. Additionally, the NSP promotes integration of TB and HIV services as essential to ensuring that co-infected patients receive appropriate care and treatment.

PEPFAR – through USAID and CDC and their implementing partners are working hand-in-hand with the NDoH to support this integration of services. The program works closely with national and provincial health departments and partners to implement Directly Observed Therapy, short course (DOTS) strategy, to integrate TB and HIV, and to strengthen infection control. PEPFAR South Africa supports the scaling-up of South Africa's TB/HIV efforts by:

- Improving planning, coordination, development, and implementation at all levels
- Assisting in the development and enforcement of technical guidelines
- Supporting efforts to raise awareness of the existence of TB/HIV co-infection and the ways through which it can be prevented
- Supporting the development and implementation of effective HIV counseling and testing methods in TB treatment settings, as well as methods to screen for and diagnose TB in HIV testing and care settings
- Increasing access to Isoniazid (INH) preventive therapy for those patients who are HIV-positive and do not have TB
- Increasing access to HIV care and treatment services for those TB patients who are HIV-positive
- Aiding in implementation of basic TB infection control in HIV care and treatment settings
- Improving prevention, detection, and management of multi-drug resistant and extensively drug-resistant (MDR/XDR) TB in HIV-infected patients
- Strengthening surveillance efforts, laboratory services, and referral networks
- Strengthening health systems to ensure equality and sustainable care
- Conducting the first South African national TB prevalence survey

PEPFAR work in partnership with local organizations that collaborate on TB/HIV activities. Partners providing TB/HIV services and activities include:

- Africare
- African Centre for Health and Population Studies
- ANOVA
- Aurum Health Research Institute
- Broadreach
- CAPRISA (Centre for the AIDS Programme of Research in South Africa), University of KwaZulu-Natal
- CARE International
- Columbia University, Mailman School of Public Health
- Council for Scientific and Industrial Research (CSIR)
- Desmond Tutu TB Centre, Stellenbosch University
- Foundation for Professional Development
- Health Systems Trust
- Hospice and Palliative Care Association of South Africa
- Institute of Youth Development South Africa
- International Organization for Migration
- Johns Hopkins University, Center for Communication Programs
- Management Sciences for Health
- McCord Hospital
- Medical Research Council that'sit (Tuberculosis, HIV, AIDS Treatment Support and Integrated Therapy)
- National Department of Health
- National Health Laboratory Service
- Perinatal HIV Research Unit (PHRU)
- Reaction!
- Right to Care
- South African Catholic Bishops Conference AIDS Office
- South African Clothing and Textile Workers' Union
- South-to-South Partnership for Comprehensive Family HIV Care and Treatment Program (S2S)
- St. Mary's Hospital
- TB/HIV Care Association

- Tshepang Trust
- University of the Free State
- University of Limpopo
- University of Pretoria
- University of Washington
- University Research Corporation, LLC
- Walter Sisulu University
- Wam Technologies
- Wits Reproductive Health and HIV Institute

PEPFAR works closely with the NDoH and several implementing partners to develop policies, build capacity of service providers, and strengthen local health systems. Objectives directly support the Five-Year Partnership Framework goals, the outputs of the Negotiated Service Delivery Agreement (NSDA); the goals of the NSP and other South African government strategies.

Training and collaboration are emphasized to ensure skill retention and sustainability. The public and private sectors work collaboratively in South Africa to capture best practices and to ensure that these practices support policy development. Increased emphasis on strengthening health systems also help to sustain gains made in the area of TB/HIV.

South Africa's dual TB and HIV epidemics are fueled by issues of poverty and limited access to counseling, testing, treatment, support, and laboratory services. Meeting these challenges is key to decreasing co-infection rates. Through close collaboration between CDC South Africa, USAID South Africa, their implementing partners, and the NDOH, strides are being made to strengthen TB/HIV services to improve the health of South Africans.

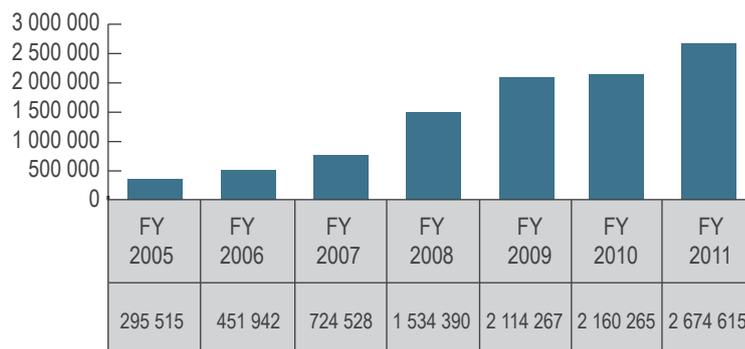
Highlights

CDC South Africa and USAID South Africa, with PEPFAR funding, has supported the NDOH in addressing HIV/TB epidemics in several ways. Highlights of the past few years include:

- Decentralization of drug resistant TB management.
- Purchase and roll-out of GeneXpert diagnostic machines
- Development and implementation of the TB registry
- Training and mentorship to community care workers
- Technical assistance to health workers in management of TB patients

PEPFAR's success in providing care to TB/HIV patients is depicted in the table below, increasing care from nearly 300,000 people in fiscal year 2005 to more than 2.6 million in fiscal year 2011.

Total number of individuals provided with HIV-related palliative care (including TB/HIV)



■ Total number of individuals provided with HIV-related palliative care (including TB/HIV)

This booklet provides a selection of the many success stories by our valued partners in developing an integrated approach to the dual TB and HIV epidemics in South Africa.



You can get TB if you inhale TB bacteria into your lungs when you share breathing space for a long time, with someone with TB disease. The most common places for becoming infected with TB are the home or the workplace.

Highlights from our Partners

SECTION

2

PEPFAR Heroes Lead the Response to HIV and TB

On a sweltering day in Khayelitsha, a South African township on the outskirts of Cape Town, guests were greeted by the melodic sounds of the marimba. Community members joined U.S. and South African government officials to recognize the tireless work of South African health-care workers, and especially two that have gone beyond the call of duty. The international PEPFAR contest, “Heroes Save Lives: PEPFAR Heroes, Going Above and Beyond” recognizes “the vital contributions of health workers, who form the backbone of the primary health service in South Africa”, said Theuns Botha, MEC for Health, Western Cape.

US Consul General Alberta Mayberry presented the awards to two proud South African health-care workers. “Progress in the fight against HIV and TB is made by one health hero at a time”, said Dr. Mayberry. And these health workers have certainly walked the extra mile -- often literally -- to take health services to their communities. Getting up at four o'clock in the morning to drive to a factory to offer HIV counseling and testing to workers before the start of the shift, or walking through flooded streets in a winter downpour to find patients who have not turned up for their daily medication are routine daily activities for Princess Dakoda and Sammy Petersen.

Princess was working as a maid when she first became aware of the devastating impact of HIV and TB on her community. She mobilized a group of women to care for the elderly and sick, and called the group Avuka HIV/AIDS (meaning “We Woke Up to HIV/AIDS” in isiXhosa).



Sammy Petersen (right) advises a TB patient to adhere to his medication

Today Princess has undergone many training courses and works as a lay counsellor in a small clinic run by TB/HIV Care Association, a dynamic organization supported by CDC with PEPFAR funds. Princess remains driven: she has registered to study to become a social auxiliary worker. “I have come a full circle”, she says, “and with these new skills, I will address the many health and social needs that first inspired me to wake up the community – Avuka!”

In 2004 Sammy Petersen reached a turning point in his life: he met someone who was dying from AIDS-related complications. Sammy was so moved by this experience that he decided to make a difference. He is an integral part of a TB/HIV Care Association team that travels the West Coast of South Africa testing people for HIV and screening them for TB and sexually transmitted infections.

Despite long working hours in often harsh conditions, Sammy is enthusiastic and completely committed to his tasks. He actively seeks ways to influence communities, and co-hosts a local radio show, “Life at Home” on Radio Atlantis that focuses on positive messages about HIV and AIDS for his community in Atlantis, a small town outside of Cape Town with high levels of poverty and unemployment.

While Sammy says he is “over the moon about being named a PEPFAR Hero”, he still believes that his greatest achievement is preventing someone from being infected with HIV. “I do this work because I love it, and making a difference is the real reward”, he says.

Dr. Mayberry said she was “humbled” in their presence. She paid tribute to the selfless service and contributions made by the unnamed and unsung health heroes around the world. Sammy and Princess were like other great health heroes like Ambassador Goosby who she said is “... the best man in the right place at the worst time.”



Sammy Petersen and Princess Dakota proudly display their awards with (from left) Mr. Theuns Botha (MEC for Health, Western Cape), Dr. Thurma Goldman (CDC South Africa), Prof. Harry Hausler (TB/HIV Care Association), and US Consul General, Dr. Alberta Mayberry.

Story of Hope - Right to Care Nurtures Patient

“I was very sick, having severe oral thrush all over my mouth, and was unable to eat easily for 5 months. I could only drink water and juice.” This is a life-changing story of Sthembile Nxumalo* who figuratively knocked on death’s door, before being saved by dedicated staff and personnel at the AIDS Care, Training & Support (ACTS) Clinic in Mpumalanga.

Sthembile, turning 32 was severely sick in 2002 after passing her grade 12 exams. “I became sick in February with TB. I went for a 6 months’ TB treatment and felt much better after that,” said Sthembile. However, things took a turn for the worse when she suddenly fell sick again in June. After her parents exhausted all avenues trying to secure their beloved daughter’s life, a neighbor who recently got medical assistance at ACTS Clinic testified to Sthembile and urged her to visit the clinic. She went reluctantly, though admitted being “too scared”. “I got counseling at ACTS and got tested and found out I was HIV positive,” she said.

“They took blood for a CD4 count and when the results came back it was 4. The doctor sent me for the first adherence counseling and gave me another follow up date for second adherence. I then committed my life to taking ARVs,” explained Sthembile. As Sthembile’s health was on the rebound, TB sprang into the fray. Thanks to the wonderful team of personnel at the clinic who supported her on a 10 month TB treatment she took concurrently with ARVs. By August the same year, Sthembile was looking much better than the person she was when she first went to ACTS.

After that, her life was to take an unexpected turn as she explains “After four months on ARVs, Dr Hardman needed more counselors at ACTS Clinic, ‘one of the counselors phoned me and asked if I could come to Acts to attend a counseling course.’ I agreed and attended the course, two months later; I started

“I am very thankful to my parents for giving me enough love and care when I was sick, and very thankful to USAID people who are helping our community by giving us the opportunity to get ARVs and preventing many deaths.”

Tackling TB with GeneXpert in KwaZulu-Natal

New machine expected to find 1,000 new TB patients within the year.

September 27, 2011 marked the start of a new era in TB diagnosis for the Sisonke District in KwaZulu-Natal: the first of five GeneXpert machines was handed over to the Pholela Community Health Centre in a vibrant ceremony hosted by TB/HIV Care Association and the provincial Department of Health.

The MEC for Health, Dr Sibongiseni Dhlomo, cut the ribbon and witnessed the GeneXpert's maiden TB test. These machines will cut the time to get a TB test result from more than 6 weeks to less than 2 hours. Drug-resistant TB diagnosed is similarly shortened. This machine has been made possible through the partnership between the Department of Health, the National Health Laboratory Service, and TB/HIV Care Association (with funding from PEPFAR through CDC and World Health Organisation's Stop TB Partnership). GeneXpert machines elsewhere have been made available through the partnership of USAID's TB Program.

The community showed their enthusiastic support for this new technology by turning out in droves to celebrate the launch of GeneXpert. TB and HIV accounts for the greatest burden of disease in KwaZulu-Natal. In 2010, the incidence rate for all types of TB was 805 per 100 000 in South Africa: Sisonke reported one of the highest rates of 1 387 per 100 000, and an alarming antenatal HIV prevalence of 35.2%.

The rate of co-infection of TB and HIV in Sisonke is high, and since it is notoriously difficult to diagnose TB in people living with HIV, many thousands of culture TB tests, taking at least 6 weeks per test, had to be sent to a laboratory which is a 2 hour drive away in a different district, prolonging the testing process even further.



A soccer team of amakhosi play a game of soccer to show their support for "kicking" TB out of Sisonke

These GeneXpert machines mean we can find more people who are sick with TB. The more people with TB we can find, the more people we can treat and the more lives we can save! – Prof. Harry Hausler, TB/HIV Care Association

Now, with the quicker diagnosis offered by the GeneXpert machines, it is estimated that more than 1000 additional TB patients could be found and started on TB treatment.

In addition, TB treatment is that it has been decentralized – instead of patients being transferred to King George V Hospital in Durban, they will now be treated at St Margaret's Hospital in the Sisonke district. Instead of staying in hospital for the duration of their treatment, patients will be re-integrated into the community where outreach teams will provide anti-TB drugs at home.

Sisonke means “together” in isiZulu, and in the spirit of togetherness, a soccer team of amakhosi (traditional healers) played a quick but colorful match to illustrate their support for “kicking” TB right out of this rural community.

Prof Harry Hausler, the Director of TB/HIV Care Association summarized the importance of the day, “These GeneXpert machines mean we can find more people who are sick with TB. The more people with TB we can find, the more people we can treat and the more lives we can save!”

Submitted: Alison Best, TB/HIV Care Association



MEC for Health, Dr. Sibongiseni Dhlomo (left) and Prof. Harry Hausler discuss the merits of GeneXpert

Jozi Hospital Speeds up Diagnosis with GeneXpert

GeneXpert really shows its mettle in the busy Charlotte Maxeke Academic Hospital's (CMJAH) Specialist TB Clinic funded by USAID. Complicated cases of TB are seen at this large urban clinic, with mono- and poly-drug resistant TB being commonplace. GeneXpert quickly diagnoses patients with resistant strains months before it is even suspected.

As a result, treatment is instituted and the disease controlled well before significant morbidity and mortality occurs. The success may not be apparent to the patient receiving painful injections and poorly tolerated second-line therapy but, as a pulmonologist, I am aware of the acquisition of additional resistance prevented by being able to start early appropriate therapy.

The decreased risk of spreading resistant disease was brought home by Ms B, a 27 year old, who brought her healthy one-month old baby girl into the clinic to "show off". If it had not been for a GeneXpert result diagnosing Rifampicin resistant TB on her sputum four months earlier the story may well have been different, with an inadequately treated mother and an unknowingly exposed infant.



The successes of GeneXpert are the patients who are saved, those who are able to be put onto treatment for TB, or for drug-resistant TB. These are the lives, which without diagnosis, would be too easily claimed by TB. - Dr. Varanna Ghabaharan, TB/HIV Technical Team

Another patient, Miss LM, aged 34, tells how her life was turned around due to TB being diagnosed timely. She first became ill in May 2011. Although she coughed a lot and lost a little weight, she did not feel that she had any obvious symptoms of TB. She was admitted to hospital for two weeks because of constant vomiting and was incorrectly diagnosed as having pneumonia. After some time TB symptoms were recognized, and she started standard treatment. This did not work at all. GeneXpert was done, providing a definitive diagnosis of drug-resistant TB, and Ms. L was sent to CMJAH for treatment.

At her first appointment, Ms. LM was in a terrible shape: wheelchair bound, and skeletal, weighing in at an alarming 29 kg. "I had to stop working because I received no help from my employer," she recalls. Her family and the clinic were the only hope: supporting her all the way. She was put onto treatment for drug-resistant TB and monitored carefully. Today, she is doing much better, her weight almost doubled, "while the treatment was not easy," she says, "it was worth it. I am thankful that the diagnosis was made." As a result of the treatment, she has peripheral neuropathy (a condition which causes pain and numbness in the feet). Miss LM says that it took her time to adjust to taking the treatment but with moral support and the correct treatment, she has recovered, and she thinks that this has been a miracle.

The successes of GeneXpert are the patients who are saved, those who are able to be put onto treatment for TB, or for drug-resistant TB. These are the lives, which without diagnosis, would be too easily claimed by TB.

Submitted by Dr Varanna Dogan Gharbaharan, Programme Advisor, TB/HIV Technical Team

Tuberculosis and Influenza: A Deadly Combination

Since 2009, CDC, in collaboration with the National Institute for Communicable Diseases (NICD), has run a sentinel surveillance program for patients of all ages hospitalized with pneumonia at hospitals in four provinces situated across the country.

This surveillance program monitors influenza and other viruses in high-risk patients, and it is of critical importance for the country and the continent as a whole. The data from the program guides influenza clinical treatment and vaccine policy recommendations.

When this data was analyzed, a surprising finding emerged: There was an increased risk of death among tuberculosis patients co-infected with influenza. The severity of tuberculosis and HIV co-infection has long been recognized, but co-infection with tuberculosis and influenza was not thought to be a major problem. This led to another question: How many patients hospitalized with pneumonia have tuberculosis, and doctors don't know about it?

This year, CDC and NICD are partnering to answer this question. In large public hospitals in two provinces, all patients admitted with pneumonia will be tested for tuberculosis with GeneXpert testing. This will provide valuable information on tuberculosis in this vulnerable population, and how tuberculosis interacts with other diseases such as influenza. Influenza can be prevented with annual vaccination, so this data may also provide evidence for patients that should be prioritized to get a flu jab.



Kicking TB Right out of South Africa

The KICK TB campaign aims to create awareness of TB among primary school learners by fusing soccer and social mobilization to create a platform to reach the target audience. Linking the KICK TB campaign to the FIFA World Cup 2010 provided a perfect vehicle for conveying positive messages that reach a maximal audience in a country besotted with sport. More than 300 health promoting schools and approximately 150,000 young children aged 6 to 13 will be targeted with TB messages using a branded soccer ball and other tools designed to maintain awareness long after the actual event.

The first KICK TB rollout took place in Ethekeeni at Greenbury Primary School where more than 900 scholars screamed in excitement when celebrities like the Minister of Health Dr Aaron Motsoaledi, KwaZulu-Natal MEC for Health, Dr Sibongiseni Dhlomo, Consul General Jill Derderian, and the well-known media personality, Gerry Elsdon were joined by the KICK TB Mascot, Turbo Boots for a morning of TB edutainment.

The children were introduced to TB through a lively child-friendly DVD, which was followed by interactive question and answer games. Dr. Motsoaledi, who had just arrived from Brazil that morning, encouraged children to be change agents in their communities. "We are reaching to schools to enlist learners as our TB Ambassadors. We know that children are very good in carrying correct messages to their homes and communities. In this way we are assured that a population will grow up knowing how to prevent TB," he said.



“The World Cup fever assisted us to use the concept of soccer in carrying the message. As you would know that we have recently launched the HIV Counseling and Testing campaign; today we are launching this TB campaign as we believe that the two are evil twins that, fought together, we can see progress speedily. Success in one means success in the other,” the Minister concluded.

Then the fun began: girls and boys played a penalty soccer game, which helps to internalize TB symptoms by shouting out symptoms of TB as they kicked the ball into the net. Minister Motsoaledi and Consul General Derderian both joined the game.

The Kick TB campaign will contribute significantly to the vision that drives South Africa’s National TB Programme. The campaign aims to increase awareness and knowledge of TB; dispel common myths and misconceptions that currently contribute to stigmatization of TB; and promote behavioral change required to prevent and treat TB infection effectively.

The KICK TB campaign was first announced on World TB Day on March 24, 2010, by Minister Motsoaledi. It is a collaborative effort led by the National Department of Health in partnership with the Desmond Tutu TB Centre at the Stellenbosch University, the University Research Corporation Inc., and CDC with funding from the USAID’s TB Program and PEPFAR.



1 South African Minister of Health, Dr Aaron Motsoaledi supports Kick TB

“Thibela TB” has Miners Covered

Aurum finds that a 40c per day preventive treatment can reduce TB cases among miners by 63%

Thibela TB, which means Prevent TB in seSotho, a predominant language among South African gold miners, is a large workplace-based study among gold miners in Gauteng, Free State and North West provinces. Gold miners have a very high prevalence of both TB and HIV. The study, led by the Aurum Institute, aimed to examine whether isoniazid preventive therapy (IPT) given to gold miners on a community-wide basis reduced the incidence of TB.

Results from the study show that gold miners who took a daily dose of IPT for 9 months had 63% fewer cases of TB than a control group of miners who had no preventive treatment. These results are from a population known to have the highest TB incidence in the world, with an estimated rate of 3000 to 7000 cases per 100,000.

The Thibela Study offered IPT treatment to eight mine shaft clusters of gold miners at three mining companies in South Africa over a five year period. A further seven clusters were enrolled as control groups. More than 24,000 gold mineworkers were started on IPT, making this study the world's largest Phase IV clinical trial of IPT to date. In the case of the last clusters involved, over 78% of the workforce at 4 shafts volunteered to take part in the study – this degree of mobilization of people to take an active role in their own healthcare is unprecedented.





IPT is an affordable option for preventing TB in those at high risk of the disease

In addition to the evidence on the effectiveness of IPT for individuals at risk of TB, previously published findings from Aurum show that it is very safe for people to take the daily treatment – there were remarkably few adverse effects (far less than the risk of TB itself).

There was also no evidence that IPT leads to an increase in isoniazid resistance, a fear expressed by many clinicians.

Each daily dose of IPT - which comes in a single pill - costs around five US cents (40c ZAR), equivalent to \$20 for a year of preventive treatment. This demonstrates that IPT is an affordable option for preventing TB in those at high risk of the disease.

The preliminary results did not show that offering IPT on a broad basis to the whole mining cluster results in a statistically significant effect in the number of incident TB cases at a population level. However, as the study was conducted on a voluntary basis, not all miners in the community agreed to take IPT and, of those that did, not all miners took their daily treatment for the full nine months.

We look forward to sharing the full results from the study and subsequent analysis at the South African TB conference in June 2012 in Durban.

For more information contact Dr Dave Clark at Aurum on 010 590 1301.

Caring for our Children: Integrating TB and OVC Programs

Integration of TB Prevention and Referral into PEPFAR-Funded OVC Programs are another step toward achieving comprehensive, family-centered support

Pact, under a cooperative agreement with USAID/South Africa, contracted an accredited service provider, Greenfield Management Solutions, to offer training to PEPFAR-funded orphans and vulnerable children (OVC) partners on how to integrate TB prevention, screening, infection control, DOT support, and referral for testing and treatment into their existing OVC care and support programs.

The five-day training focused on teaching community care workers how to provide these services at household and community level during the course of their routine home visits and other program activities. The training focused on giving participants the skills and knowledge to screen household members for TB and refer for testing if symptoms exist, to educate families on basic preventive measures and infection control, and to provide DOT support for household members on TB treatment.

The training was provided to 386 participants in 14 groups across all nine provinces between October 2011 and February 2012. To maximize results, the training prioritized TB high-incidence districts and used a training-of-trainers methodology, supporting the learners to replicate the training within their organizations.

Pre- and post-tests conducted during each workshop showed a dramatic overall increase in TB and TB/HIV knowledge among participants, as well as a strong commitment to replicating the training and rolling out TB activities within their organizations.

Several of the partners have already reported significant progress in integrating TB and TB/HIV activities into their OVC work. World Vision, for example, has cascaded the training by incorporating it into their Primary Care Giver Training workshops, currently being conducted in the Eastern Cape. World Vision has also made use of regular monthly team meetings for this purpose. Several community-based partners have already conducted TB awareness campaigns in various areas, one in partnership with the Eastern Cape Department of Health.

Looking closer to the ground, one of the care workers in a school-based program identified a TB risk posed by the school's sick bay, which was in a classroom and not partitioned. Her understanding of infection control empowered her to successfully make a case for the sick bay to be relocated. Her group also conducted a community campaign to promote proper hand washing and other infection control measures.

Trained Nurses are Key to Managing Drug-Resistant TB

The National Department of Health in South Africa is currently expanding efforts to decentralize multi-drug resistant TB (MDR-TB) management and care to community-based settings already faced with a high burden of HIV. According to South African Department of Health estimates, nearly 70% of patients with MDR-TB are co-infected with HIV in KwaZulu-Natal.

Currently, the therapeutic regimen for MDR-TB is at least 24 months long, and demands strict medication administration, monitoring of weight and adverse drug reactions, and key blood tests. Treatment for HIV for those co-infected adds yet another layer of complexity, especially for those who may be newly diagnosed. As a result, not only is patient adherence vital for optimizing health outcomes, but clinician adherence also becomes crucial.

This coordination of care for MDR-TB patients with and without HIV demands a growing cadre of skilled health care workers at the community level who are and feel adequately equipped to monitor and manage adverse drug reactions towards improved treatment outcomes. Prior surveys of nurses in the province have illustrated nurses' lack of confidence to care for patients with MDR-TB and HIV, especially when it came to symptom management in co-infection.

In response, a unique collaboration, funded through CDC/PEPFAR, joins together expert faculty and staff from the South African Medical Research Council, Johns Hopkins University School of Nursing, and KwaZulu-Natal Provincial and District Departments of Health TB Coordinators and trainers to develop, pilot and evaluate capacity development in MDR-TB/HIV management of adverse drug reactions for primary health care nurses.

Since 2010, partners have developed and piloted MDR-TB and HIV symptom management training modules based on existing curricula for medical officers, and the current clinical evidence base. The training has grown from a 2-day training to a 5-day interactive adult-centered course, including MDR-TB/HIV case studies, and workshops on psychiatric side effects, stigma, adherence, and documentation. Modules are facilitated by all partners and now address rising concerns and data regarding patient safety by training nurses specifically on MDR-TB and HIV co-infection, including the management of adverse drug reactions.

Over the last 12 months, more than 200 primary health care nurses, 5 physicians, and 3 District Coordinators throughout KwaZulu-Natal have been trained via this expanded curriculum. Evaluation data has clearly demonstrated their increased comfort in caring for patients burdened with the complex treatment regimens from both MDR-TB and HIV. Participants have transferred their learning to other nurses through in-service training, or by utilizing new techniques learned to monitor and manage treatment side effects more effectively.

Ultimately, given an increasing focus on TB/HIV integration, decentralization of MDR-TB management, and the current shortage in trained medical officers to meet the needs of those co-infected, the research team also aims to use this data to further demonstrate the capacity of trained primary health care nurses to better manage side effects and improve treatment outcomes for those impacted most by MDR-TB in a high HIV burden setting.

Submitted: Jason E. Farley, PhD, MPH, CRNP, Johns Hopkins University School of Nursing/South African MRC

The coordination of care for MDR-TB patients with and without HIV demands a growing cadre of skilled health care workers at the community level who are and feel adequately equipped to monitor and manage adverse drug reactions towards improved treatment outcomes.

TB/HIV Care Nurse Mentors Boost the Rollout of IPT

Isoniazid Prophylaxis Therapy (IPT) has been proven to decrease the chance of TB developing in people living with HIV by up to 60%. Although this has been national policy since 2003 and provincial policy since April 2010, the implementation of IPT in South Africa has been problematic, primarily due to the difficulty of diagnosing active TB in HIV positive patients. If someone with active TB is treated with IPT, the TB may develop a resistance to isoniazid, making it much more difficult to treat. Other concerns include potential IPT toxicity and an inadequate supply of the medication. Despite these difficulties, KwaZulu-Natal set itself a target of starting 120,000 HIV positive people on IPT from April 2010 to March 2011, of which the District of Sisonke had to reach a target of 12,000.

TB/HIV Care Association assisted with the roll-out of IPT in Sisonke through its nurse mentorship program funded by PEPFAR through CDC. Five experienced nurse mentors act as primary health care supervisors to four or five clinics or other health facilities in sub-districts in Sisonke.



The nurse mentors began formal training on the 2010 clinical guidelines to ensure that IPT was part of the package of care offered to HIV-positive clients. The nurse mentors also trained staff to screen for active TB, and mentored lay counselors and professional nurses to ensure high quality counseling. TB/HIV Care developed an IPT register to track clients and to monitor their weight, adherence, side effects and monthly TB screening for two years. These registers were also used to evaluate the effect of IPT on patients, and to assist management with forecasting drug supply needs.

TB/HIV Care took care to ensure that all the clinics knew what their targets were and involved the national, provincial and district program managers in auditing the progress of the clinics. All people who tested positive as part of the nationwide HIV counselling and testing campaign should be entered into appropriate care.

A strong partnership between the TB and HIV programs, and between the Department of Health, TB/HIV Care Association and CDC was the key to working through challenges when they occurred and ensuring a successful outcome in rolling out this potentially life-saving preventative treatment.

Despite some of the challenges – fears of the toxicity and resistance to isoniazid, ensuring that there was an adequate and sustainable supply of isoniazid for clients, managing the confusion when IPT strengths changed from 100 mg to 300 mg tablets and motivating clients to continue taking treatment when they were well; the program was a success.

TB/HIV Care's nurse mentors were champions for IPT, making all the difference. The percentage of people targeted to start on IPT rose from 19% in the April 2010 to 81% in March 2011. The nurse mentors and their partners in the Department of Health helped 95% of patients to adhere to their course of isoniazid treatment. The Department of Health will adopt the IPT register in all districts. A strong partnership between the TB and HIV programs, and between the Department of Health, TB/HIV Care Association and CDC was the key to working through challenges when they occurred and ensuring a successful outcome in rolling out this potentially life-saving preventative treatment.

Submitted: Jennifer McLoughlin, TB/HIV Care Association

An Award Winning TB Program: Responding to Community Needs

The University Research Corporation funded by USAID supports TB and TB/HIV programs in all 9 provinces. In 2010, Sedibeng district was identified for TB programming support by the Gauteng Department of Health. Baseline assessments were conducted the same year to inform interventions, after which work plans were developed. Some of the identified gaps included recording and reporting, poor implementation of the 3 'I's, including Isoniazid Preventive Therapy (IPT).

Following baseline assessments, University Research Corporation conducted TB/HIV training for health care workers, followed by monthly support supervision and on site mentoring and coaching. Tools introduced included a carbonated TB screening booklet, an IPT follow up register, and a patient's card. Uptake of IPT was monitored quarterly to track progress.

Improvements in uptake of IPT were noted in all the facilities following the interventions as shown in the figure below

Improvements in TB/HIV integrated programming can be achieved through introduction of tools; training based on needs and sustained support supervision to facilities. The district was awarded a trophy for best improved Gauteng district for TB program and IPT implementation for 2011.

**IPT implementation in Sedibeng, data from 15 Facilities:
Jul 2010 - Aug 2011**



TB Patients Take Charge

TB is caused by bacteria (a type of germ) called *Mycobacterium tuberculosis*. A person who has TB disease in his or her lungs or larynx can release tiny particles called droplet nuclei into the air by coughing, sneezing, singing, shouting, talking, or breathing. These particles are invisible to the naked eye and can remain airborne in room air for a long period of time, until they are removed by natural or mechanical ventilation.

Ventilation is the movement of air in a building and replacement of inside air with air from the outside. In larger hospitals and health facilities, mechanical ventilation or air conditioning is used to circulate the air, but in smaller facilities or homes, we rely on natural ventilation, or opening doors and windows to bring in air from the outside. Fans may also assist in this process and distribute the air.

Although there has been a lot of infection control training and education in health facilities, the Eastern Cape Department of Health soon recognized that this is largely neglected at the community level, and with the help of CDC and the Council for Scientific and Industrial Research (CSIR) quickly developed a series of outreach visits, taking the classroom right into the communities.

The team provided education on how TB is spread and on the importance of fresh air and personal practices in preventing the spread of TB. Meetings with TB-infected clients are conducted every four to six weeks, and not only do these serve as vehicles for health education, but they also function as support groups for people infected and affected by TB. Patients eagerly attend the meeting to share their story and to ask questions about TB prevention and treatment. These sessions are supported with a variety of print materials provided by CDC: open window and door stickers, posters, and pamphlets.

The community health education groups have increased screening and testing of TB cases within the rural communities, primarily by reducing the stigma within communities.

Submitted: Pietie Voigt, Eastern Cape Department of Health



Support group meet to discuss infection control and adherence to medication

Eastern Cape Protects Health Care Workers

Alfred Nzo in the Eastern Cape is home to nearly half a million isiXhosa people, and is characterized by high unemployment and poverty. In addition HIV and TB rates are high with a 23.6% HIV prevalence and 787 TB cases per 100 000.

In 2009 the District noticed that the number of health care workers diagnosed with TB more than doubled from 4 in 2009 to 12 in 2010. Health care workers (HCWs) are in short supply throughout South Africa and poor infection control renders them extremely vulnerable to the threat of TB in the workplace. Fundamentally, TB infection control is about safety — people receiving or offering health care should not have to worry about being exposed to and infected with TB in the process. The emergence of drug-resistant TB and the on-going problem of weakened immune systems due to HIV has exacerbated the problem.

Committing increased resources to infection control in low resource settings is essential to decreasing the spread of communicable disease including TB, and it was with alarm that the District health officials noted that no formal TB infection prevention and control (IPC) strategy and programme was being implemented in the province.



HCWs are more vulnerable to TB infection

The risk assessments showed:

- *86% of facilities screen all patients entering the facility for TB*
- *90% of facilities conduct rapid sputum collection of suspects*
- *77% of facilities optimize natural ventilation to dilute airborne contaminants*
- *95% of facilities purchase correct respirators for personal protection*
- *233 HCWs undergone fit testing*

The Council for Scientific and Industrial Research (CSIR) with the help of CDC and PEPFAR funding sprang to action when the Eastern Cape realized that the health care workers were not trained in IPC, nor was there an official system to routinely screen those workers who were in regular contact with TB patients. This was the start of a strong and sustainable partnership that would result in a mechanism to address IPC challenges in the Alfred Nzo district.

A District TB Infection Control Team was appointed and with the help of the CSIR, they began to conduct training, and to provide practical support and mentoring to various categories of health care workers in 2011. In all 61 HCWs were reached. The District Infection Control team was not neglected: they received targeted practical training on conducting TB risk assessment techniques and on baseline assessment; using a scientific tool that was developed by the CSIR.

The team and CSIR conducted baseline assessments in 44 facilities from January to March, 2011. The Hazard Analysis Critical Control Points (HACCP) methodology was adapted to evaluate TB infection risk areas and requisite (or implemented) controls.

Submitted: Thabang Molefi, CSIR

Integrating TB and HIV Treatment Saves Lives

The SAPIt Trial – Linking Research into Policy and Practice

South Africa has been the hardest hit by the HIV and TB epidemics. In 2007 an estimated 5.3 million people were infected with HIV and 341,165 with TB. It is estimated that 73% of these TB patients are also infected with HIV. The close and deadly epidemiological link between HIV and TB has added a considerable burden to an already overburdened health care system. The optimal timing of antiretroviral therapy (ART) in patients on TB treatment has remained unclear and empirical evidence supporting the integrated treatment of both diseases has been lacking. Despite WHO guidelines supporting the concomitant treatment of the two diseases, the initiation of ART is often deferred to after the end of TB treatment. Guidelines have, thus far, been informed by observational studies and expert opinion. Concerns about potential drug interactions, immune reconstitution inflammatory syndrome (IRIS) and overlapping side effects have influenced integration of treatment. The Starting Antiretrovirals in Three Points in Tuberculosis Trial (SAPIt) aimed to determine the optimal timing of initiating ART in TB patients.

The SAPIt trial was a randomized controlled trial conducted at the CAPRISA eThekweni Treatment Clinic, based in the Prince Cyril Zulu Communicable Disease Centre. From 28 June 2005 to 11 July 2008,



The Prince Cyril Zulu Communicable Diseases Clinic, Durban South Africa. Site for the SAPIt Trial Implementation

we recruited patients who were eligible for the study (i.e., patients 18 years and older, with confirmed HIV positive status, and a positive diagnosis of TB with a CD4 count <500). After written consent was obtained from all patients and once all eligibility criteria were met, enrolled patients were randomly assigned to 1 of 3 groups:

Group 1: ART was initiated within 4 weeks of starting TB treatment

Group 2: ART was initiated within 4 weeks after completing post-intensive phase of TB

Group 3: ART was initiated within 4 weeks of completing TB treatment

All patients received adherence counseling, cotrimoxazole prophylaxis and adherence to ART was assessed monthly according to pill counts. Regardless of what group patients were randomly assigned to, ART could be started at the study clinicians or by personal physicians' discretion at any point in the study, if it was in the patient's best interest.

Patients were followed up on a monthly basis and assessed for side effects, safety and opportunistic infections by a study doctor. Safety blood tests, CD4 and viral loads were conducted at screening, enrollment and on a six monthly basis. Patients were followed up for 24 months. Patients who missed clinic appointments were tracked by a team of field workers either telephonically or by making home visits. At every visit serious side effects, hospitalizations and abnormal blood results were recorded and reported to the ethic committee that had oversight of these studies.

One thousand three hundred and thirty one (1331) patients were screened for the study and (N=642) were enrolled and randomized. 429 were randomized to Group 1 or Group 2 (Integrated Therapy group) and 213 were assigned to Group 3 (the sequential therapy group).

Clinical care of the study participants was funded by PEPFAR, the eThewini municipality funded the costs of TB management, and opportunistic infection prophylaxis while the Global Fund for AIDS TB and Malaria covered the costs of the antiretroviral drugs used for patients. The US National Institutes of Health funded the research infrastructure that supported the trial.

This trial demonstrated that the initiation of ART during TB therapy in patients with confirmed TB and HIV co-infection reduced mortality by 56%. There were 25 deaths in the integrated group versus 27 in the sequential group. IRIS was diagnosed in 53 of the 429 patients in the Integrated arm versus 8 of the 213 in the sequential arm. No changes in ART regimen were made and none of the deaths were determined to be related to IRIS. Patients CD4 count played an important role in mortality in the study. Among patients with a CD4 count of <200, the rate of death was 56% lower in the integrated group than in the sequential group. In a small group of patients with a CD4 between 200-500 (156 in the Integrated



This trial demonstrated that the initiation of ART during tuberculosis therapy in patients with confirmed TB and HIV co-infection reduced mortality by 56%.

Arm and 75 in the sequential arm) there was a trend toward a lower death rate in the integrated arm (2 deaths versus 6 deaths). This was a very important finding in the study. WHO guidelines had recommended that for the treatment of patients with HIV and TB, deferment of ART till after TB with WHO Stage 3 HIV infection and CD4 more than 200. The SAPiT study findings suggest that this guideline should be expanded to include co-treatment of HIV infection and TB in patients with CD4+ counts of less than 500.

These study findings has resulted in changes to WHO, DHHS and SA DoH guidelines for treating HIV TB co-infected patients. These guidelines now recommend that TB HIV co-infected patients with a CD4<350 are eligible for HAART initiation, as survival probability is better when TB and HIV treatment are integrated – and all guidelines reference the SAPiT trial as providing the evidence for this recommendation.

1. Abdool Karim, S.S., et al., Timing of initiation of antiretroviral drugs during tuberculosis therapy. *N Engl J Med.* 362(8): p. 697-706.
2. WHO. RAPID ADVICE: Antiretroviral therapy for HIV infection in adults and adolescents. Geneva, Switzerland 2009.

Submitted: Dr. Kogieleum Naidoo. CAPRISA

TB/HIV Care Teams on the Move

With the largest number of people living with HIV, the South African National Minister of Health, Dr Aaron Motsoaledi, announced the ambitious, nationwide HIV Counseling and Testing Campaign (HCT) aiming to test 15 million adult South Africans for HIV by June 2011. Testing for HIV is a critical part of HIV prevention and treatment. HIV testing includes counseling on how to avoid further infections by those who test negative or positive, making the HIV test itself an important tool in HIV prevention. Similarly, if patients don't know their HIV status, they cannot be treated for HIV, so testing is the first step to accessing appropriate health care.

Through funding provided by PEPFAR through CDC, TB/HIV Care Association has found the answer to making HCT and screening for TB and STIs accessible to a wide range of people: we established mobile teams that go to the communities at risk.

TB/HIV Care has six teams devoted to helping people in the Western Cape. Each team consists of a registered professional nurse counselor, and three lay counselors who also act as community mobilizers. These teams reach out to the most vulnerable in hard-to-reach places, ranging from farms and factories to correctional facilities and institutions of higher learning. The HCT teams often work early in the morning



Portable tents are set up in hard-to-reach areas in the Western Cape

or in the evening and in harsh outdoor conditions, sheltered only by their customized testing caravans and gazebos. But by reaching out to people where they are, when they are available, instead of waiting for them to come to clinics, the HCT teams are able to access a larger number and a greater range of people with their services.

Since start of this program, mobile HCT teams have increased the number of people that they test nearly seven-fold per quarter, rising from 1,732 in December 2008 to 11 983 in March 2011. The ambitious target set by the National Minister of Health of testing 15 million adults by June 2011 have been broken down into smaller targets for each province and substructure. With 3 months still to go, the CDC funded TB/HIV Care HCT teams have already reached 79% of the target set for them.

Submitted: Phebe Gribble, TB/HIV Care Association

Testing for HIV is a critical part of HIV prevention and treatment. HIV testing includes counseling on how to avoid further infections by those who test negative or positive, making the HIV test itself an important tool in HIV prevention.

Since the launch of the pilot project in May 2011, a number of community-based TB tracing teams have been trained to use smart phones to collect information at household level on patients diagnosed with TB (index cases) and on those they have been in contact with, in particular family and other household members. A maximum of 37 teams were using the SP simultaneously and no major problems occurred for data capturing and transmission.

TB index cases are identified through the electronic TB register and Google™ Earth is then used to geo-code the patient's home location. The results of the geo-coding, together with the patient's centrally stored information are fed via GSM to the smart phone.

The smart phone is customized to update geo-codes, capture and validate data and transmit information in real time. The technology is able to communicate two-way, helping tracing teams with feedback and decision support. The technology is also able to support decision making at higher levels of management by producing timely and actionable public health information such as reports and maps.

A total of 4,555 households over a target of 7,436 (61%) were located. Of 10,469 contacts targeted, 6,204 (59%) were found at the time of the tracing team visit and 920 (15%) of them found to be suspects cases, of which 533 (58%) provided sputa sent to the laboratory. HIV counseling and testing was offered to 4,738 family members, with an acceptance rate of 37%. Forty-one pregnant women were referred to antenatal care.

The problem of untraced households requires novel strategies to tackle stigma and locate the households through the collaboration of community leaders and community health workers.

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The interviews with the tracing teams and managers have confirmed that the Smart Phone is well accepted and is preferred to collecting data on paper forms. Positive characteristics mentioned by interviewees included efficiency and speed in data collection, timely availability of indicators for managers and assurance of privacy of the recorded data.

This system ensures cost effective resource utilization, decreased duplication of information, increased speed of data capture and relay, improved decision-support and the effective distribution of vital information.

Baseline Evaluation Assesses TB Program Management

The dual epidemics of TB and HIV in South Africa continue to cause major public health challenges in the country. The TB epidemic is escalating partly because of growing numbers of undiagnosed and untreated people with TB in the community (Wood et al. 2007). Moreover, increasing numbers of untreated TB suspects also present together with immune-suppressed patients (e.g. people living with HIV) at public health care facilities, increasing the chances of infection and re-infection with TB. Conventional measures such as passive case finding and directly observed therapy, short course (DOTS) on their own are insufficient to curb this epidemic, especially amidst an escalating HIV epidemic. Urgent measures are needed to complement the existing TB control policies and practices. These include, for example, better TB/HIV integration, intensified case finding, improved infection control, more accurate recording and reporting, as well as proper management of multi/extensively drug-resistant (MDR/XDR) TB.

Better quality data leads to better decision making and, more importantly, improves quality of care—Neil Jacobs, CDC South Africa

CDC partners, including the Medical Research Council's **Tuberculosis, HIV, AIDS, Treatment Support and Integrated Therapy** (that'sit); TB/HIV Care Association; WAM Technology; and the Council for Scientific and Industrial Research work in complementary ways to deliver innovative measures to improve TB and HIV management. Firstly, that'sit and TB/HIV Care Association work to improve TB/HIV integration and TB case finding. The CSIR specializes in all aspects of infection control, while WAMTech deals with improving recording and reporting.

Two provinces with high TB and HIV rates are the Eastern Cape and the Northern Cape: In 2007, at 787 cases per 100,000 population, the Eastern Cape realized only a 59.9% TB cure rate, the third lowest in the country; and antenatal surveillance reports indicated more than 20% HIV prevalence among women attending antenatal services in this province. In the same year, at 858 cases per 100,000 population, the Northern Cape achieved a mere 62.8% TB cure rate and antenatal care surveillance reports indicated more than 16.2% HIV prevalence among women.

CDC partners were asked to intervene in Alfred Nzo and O.R. Tambo districts (Eastern Cape) and in the John Taolo Gaetsewe District (Northern Cape). Before starting anything, however, the Centre for Health Systems Research & Development (CHSR&D) with PEPFAR funding undertook a baseline evaluation

of the TB control program in each of the districts. The rigorous evaluation of each district included an assessment of (a) TB/HIV integration, (b) intensified case finding, (c) infection control, (d) recording and reporting, and (e) management of drug-resistant TB.

Data were gathered through interviews with either the operational manager, TB nurse or a nurse actively working in the TB program. In addition, observations were conducted with regard to equipment and drug supply, environmental and infection control, and the availability of TB and HIV/AIDS guidelines and policies. Also, observations were noted as to the completeness and outcomes of various TB-related recording mediums. The data gathering process took approximately 90 minutes to complete per clinic, and two clinics were visited per day. The fieldwork was undertaken by CHSR&D staff, including locally-contracted fieldworkers fluent in local languages.

Data was edited, coded, captured and analyzed using a statistical computer package. All questionnaires were double captured, and the two data sets compared to ensure accuracy and completeness. Double capturing also facilitated data cleaning and defaulting. Univariate analysis was performed on the data and results were presented in descriptive tables.

Feedback was provided to both provinces in separate meetings, which included representatives from the provinces, and the implementing partners. BroadReach, funded by PEPFAR through USAID, undertook to work with CSIR and the Alfred Nzo district to address problems. In the OR Tambo district, drug shortages reported during fieldwork were immediately addressed, and the Regional Training Centre was tasked to work together with the ECDoH on training initiatives. Similarly, the John Taolo Gaetsewe District representatives agreed to work with Right to Care to address problems.

Data collected provided a 'before' picture of TB control in each of the three districts ahead of planned implementation of intervention activities. In the case of each of the three districts there was complete buy-in by the provinces and districts in the evaluation.

Submitted: Prof. Christo Heunis. Centre for Health Systems Research & Development



Evaluation planning workshop, Umtata

PEPFAR

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